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ABSTRACT

This is an evaluation of a Title VII Bilingual/Bicultural Program that was conducted at a New York City high school in 1979-1980. The program served Chinese and Korean speaking students. A demographic analysis of the school's neighborhood and a discussion of participating students' characteristics are provided. The program description outlines the project's background, organization, and structure. Instructional components of the program that are reviewed include: (1) programming and transition; (2) bilingual classes; and (3) funding of the instructional component. Non-instructional components discussed include: (1) curriculum and materials development; (2) supportive services; (3) staff development; (4) parent and community involvement; and (5) affective domain. Tables show students' results on the Criterion Referenced English Syntax Test and other tests measuring reading achievement, oral language ability, mathematics achievement, science achievement, social studies achievement, and native language arts achievement. Tables also show students' parents' achievement on English language tests. Attendance figures for both parents and students are presented. Recommendations and conclusions are offered. (APM)

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FINAL EVALUATION REPORT

NEWTOWN HIGH SCHOOL

QUEENS CHINESE/KOREAN BILINGUAL LANGUAGE

ARTS RESOURCE CENTER

ESEA TITLE VII

PROJECT 5001-42-07635

NYS CHAPTER 720

PROJECT 5001-42-08405

1979-1980

NEW YORK CITY PUBLIC SCHOOLS

OFFICE OF EDUCATIONAL EVALUATION

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FINAL EVALUATION REPORT

NEWTOWN HIGH SCHOOL

QUEENS CHINESE/KOREAN BILINGUAL LANGUAGE

ARTS RESOURCE CENTER

ESEA TITLE VII

NYS CHAPTER 720

1979-1980

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QUEENS CHINESE/KOREAN BILINGUAL LANGUAGE ARTS RESOURCE CENTER

NEWTOWN HIGH SCHOOL

Location:	48-01 90th Street, Elmhurst, Queens
Target Languages:	Chinese, Korean
Number of Participants:	Chinese - 253, Korean - 130
Principal:	Mr. Joseph Weintraub
Coordinator:	Dr. Margaret Pan Loo

I. DEMOGRAPHIC CONTEXT

A. Sites: The Queens Chinese/Korean Bilingual Language Arts Resource Center operates at Newtown High School in the Elmhurst-Corona area. The program also furnishes ancillary services to students at six Consortium schools:

John Bowne High School

William Cullen Bryant High School

Flushing High School

Forest Hills High School

Hillcrest High School

Jamaica High School

All of the Consortium schools are located in Queens. Site selection was founded on the number of Chinese-and Korean-speaking immigrants living in the attendance areas.

B. Context: Newtown High School is located in a low-middle-income area; the immediate vicinity is largely residential, characterized by single family dwellings and rows of attached housing. The neighborhood seems so tranquil that one is almost surprised to come upon a large high school.

The area is inhabited by a multi-racial and multi-ethnic population. Indeed, at least 41 ethnic groups are represented in the attendance area. Asians account for 14% of the population. The area's Asian population, which includes numerous recent immigrants from the People's Republic of China, Korea, and several countries of Southeast Asia, are among the more marginal in terms of economic resources. For the most part, they arrive in the U.S. with little or no financial backup. What employment is available tends to be menial, and offers little compensation. Since these immigrants typically have no command of English, they do not have access to better paying jobs. Many arrive with a substantial educational background, but often without records and/or diplomas to document that history.

The financial difficulties of the Asian community are reflected in the number of their high school children who are eligible for free school lunches: 77% of Asian students enrolled in the program, compared to 20% of Newtown's student body as a whole.

High-school-aged children of recent immigrants can generally navigate in the native language in their communities, and certainly speak the native language at home. They may have little occasion to use English outside of school, except when they are watching television or listening to the radio.

II. STUDENT CHARACTERISTICS

A. Entry Criteria: The program has been designed to provide bilingual educational services to Chinese- and Korean- dominant students who live in the attendance area of Newtown High School, as well as to those who live in the attendance areas of the other Consortium schools, but may be permitted by High School Placement to enroll at Newtown. About 30% of the program's participants live outside of the school's attendance area. In addition, the program provides ancillary (but not instructional) services to students at the Consortium schools.

Participating students have demonstrated limited English language proficiency by scoring below the 20th percentile on the Language Assessment Battery. Since immigrants from Asia typically arrive in the U.S. with little or no background in English, and often find the unfamiliar alphabet and markedly different syntax difficult to grasp, the vast majority of recently arrived students meet that criterion. In fact, approximately 600 Chinese- and Korean-dominant students in the Consortium schools--roughly twice the number the program could accommodate--were found to be eligible for participation. Students who could not be accommodated by the program were furnished with ESL instruction implemented by the participating schools, and with ancillary services provided by the program.

B. Ethnic Composition: The composition of Newtown High School as a whole was in 1979-80 approximately: 37% Hispanic; 16%

Black American; 9% Asian; 38% Other. The program itself served a total of 383 participants--253 Chinese-dominant and 130 Korean-dominant. All were foreign-born. The Chinese-dominant students included immigrants from Hong Kong, Taiwan, the People's Republic of China (hereafter referred to as Mainland China), and Vietnam. In the program's second year a significant number of new entrants were from Mainland China and Vietnam. The approximately 50 students from Vietnam were ethnic Chinese whose home language and cultural orientation are Chinese, and who were educated in Chinese schools. Testing indicated that they were more comfortable and more literate in Chinese than in Vietnamese.

C. Language Proficiency: Virtually all high-school-aged immigrants from Korea and most Chinese-speaking immigrants have minimal knowledge of English when they enroll in American schools. The steep language barrier undoubtedly accounts in large measure for the inflated rate of academic failure and the high drop-out level among the target population. (See section on needs assessment in Program Description.) Without intensive ESL instruction and bilingual instruction, they cannot compete in the academic world or in the job market with their English-language-proficient peers.

D. Diversity: Program students come from a variety of geographic areas, and therefore from various linguistic backgrounds. Among the Chinese students are speakers of the Cantonese, Mandarin, and Toishanese dialects. (Speakers of Toishanese generally can communicate in Cantonese). Those who speak the two primary dialects

must make concerted efforts to understand each other's oral communications--that is, to become familiar with the other dialect.

The target population is relatively diverse in terms of social context and educational background. While some students have immigrated with their families, others, including the ethnic Chinese Vietnamese (some of whom numbered among the "Boat People") have experienced political and social upheaval, which has disrupted family life.

Program students tend to come from educated families. There is, nevertheless, a range of academic ability and preparedness. Students from Mainland China, for example, tend to have a lower level of written language skills; their formal schooling--perhaps three hours per day--was limited due to their obligatory service in the fields or factories. These students often require tutorial assistance.

III. PROGRAM DESCRIPTION

A. Background: The Queens Chinese/Korean Bilingual Language Arts Resource Center is geared to offering instructional and supportive services to eligible students enrolled at Newtown High School, and to furnishing ancillary educational services to students enrolled at the six public high schools which were selected as Consortium sites. The program was in 1979-80 in its second year of operation.

The Asian and Pacific Islander population of New York City's academic-comprehensive high schools has increased markedly over the last decade, from 3,443 (1.5%) in 1968 to 7,776 (2.7%) in 1977. The number and percentage have undoubtedly risen since 1977.

Statistics on reading levels (in English) and non-graduation (departure or drop-out) at the seven Consortium schools underscore the target population's need for bilingual educational services. A report entitled "Queens High Schools Mean and Median Reading, Ninth Year Test, 1975 and 1976 (Seven Serviced Schools)" indicated a decrease in mean and median reading scores at all seven Consortium high schools. During the same time period, the number of Asian students enrolled at these schools increased. Departure or drop-out data for the same year demonstrated that an average of 24%, or nearly one-forth of the Consortium schools' population, did not graduate or receive a high school diploma. Asian students who were dismissed or dropped out of school account in significant measure for the above data.

In response to those alarming statistics, the program was initiated in 1978 to provide intensive English language instruction, instruction in the native language, and bilingual coursework in content areas, to Chinese- and Korean-dominant students, particularly those in the ninth and tenth grades.

In addition, the program was oriented toward the following goals:

- producing bilingual curriculum materials;
- providing opportunities for staff development for Asian bilingual teachers;
- offering supportive services to Asian students both at Newtown and at the other Consortium high schools;
- creating and supporting parental involvement, and furnishing to parents ESL classes and Citizenship education materials.

The program's long-term objectives were to promote high school graduation, the pursuit of higher education, and/or entry into the job market. The program further sought to cultivate in its students a positive or enhanced self-image and to foster understanding of a culturally pluralistic society.

To attain these goals, the program has employed a comprehensive approach to instruction in both English and the native language; it incorporates instruction in the history and culture of the United States with the history and culture of the geographic areas associated with the dominant languages of the participants.

In speaking with the school's principal, the evaluator received the impression that the administration supports fully the long- and short-term objectives of the program, and endorses its general approach toward implementing those objectives. Since there is a bilingual program serving Hispanic students at

Newtown, a precedent existed for bilingual education; in this sense, delivery of services to Chinese- and Korean-dominant students was easily accepted by the school's administration and faculty. The Principal particularly indicated support for the methodology employed by program teachers.

B. Organization/Structure: Responsibility for program implementation rests with the Program Coordinator, who oversees services delivered under Title VII and under Chapter 720. Title VII funding provides instructional and supportive services to 383 Chinese- and Korean-dominant students enrolled at Newtown, and ancillary services to students dominant in the same languages, but who are enrolled at the other Consortium high schools. Chapter 720 funding provides services to a portion of the same target population, that is, 125 of the Chinese-dominant students enrolled at Newtown, through the services of one teacher and one educational assistant. (See Table 1).

IV. INSTRUCTIONAL COMPONENT

A. Programming/Transition: The Project Coordinator and her staff assemble the instructional programs of Center students--those who live in the Newtown attendance area, and those who live in the attendance areas of the Consortium schools but who are granted permission by High School Placement to enroll at Newtown in order to receive bilingual classroom instructional services.

The Center's program lays stress on transition, its basic scope is two years. Generally, students receive bilingual instruction in content areas in the ninth and tenth grades, and then enter other appropriate level classes. However they remain affiliated with the bilingual program in several respects: 1) they continue to receive instruction in Native Language Arts throughout their high school careers; 2) they continue to receive supportive services; 3) they continue to take part in cultural and other extracurricular activities offered by the Center; 4) some students receive tutorial services to ease transition to English only instruction.

Eligible students who arrive in the U.S. with educational credits for (or equivalent to) the ninth and tenth grades enter the eleventh; they nevertheless receive instruction in ESL, and take bilingual courses in content areas where school records indicate deficiency in terms of graduation requirements. Eleventh graders also enroll in bilingual Social Studies classes if they lack required credits in that area.

Entering students typically have the following instructional program:

ESL (double period)

Bilingual Science

Bilingual Social Studies

Native Language Arts

Physical Education

In their first year in the program, students generally do not take Math classes. Center students, who tend to be well prepared in that area, take Math courses in the mainstream; they need intensive ESL training before they can handle the terminology and other verbal aspects of Mathematics instruction.

B. Funding of Instructional Component:

Table 1 on page 14 indicates the funding sources for the Center's personnel. In terms of the instructional component, the following summarizes funding sources:

Content area bilingual classroom instruction:	1 Teacher -- Chapter 720
	1 Teacher -- Tax Levy
	4 Ed. Assts. -- Title VII 1 Ed. Asst. -- Chap. 720
Native Language Arts instruction	2 Teachers - Tax-Levy (1 Chinese, 1 Korean; Korean teacher also teaches bilingual Social Studies)
ESL	6-8 Tax-Levy

C. Bilingual Classes: Table 2 on page 15 summarizes the Center's instructional offerings. The following comments are intended as brief explanations of that table.

1. English as a Second Language: ESL is taught in classes which are linguistically integrated: students dominant in Chinese, Korean, Spanish and other languages receive instruction together. Two levels of ESL, designated 1 and 2, are taught in double periods (10 periods per week). This instruction is followed by ETR--(English Transitional Reading), levels 3,4,5, and 6, which is taught for one period each day.

2. Native Language Arts: The Center provides a full program of NLA instruction to each language group. (Chinese-dominant students are offered NLA instruction in Cantonese and Mandarin.) Ten levels of Chinese NLA and four levels of Korean NLA are offered at present.

3. Content Area Instruction: The Center offers instruction in Science and Social Studies. (Students take Math classes in the mainstream, with tutorial support from the program's educational assistants.)

a. General Science: During the Spring 1980 term, one section of Korean Bilingual General Science class was added to the program. The Korean bilingual Educational Assistant also helped in the class. Chinese students were offered Bilingual General Science and Biology (1 section each in Cantonese, 1 section each in Mandarin).

b. Social Studies: Bilingual Korean instruction was offered in World Studies (stressing geography) and World History. Bilingual Chinese instruction was provided in World Studies and World History (1 section of each in Mandarin, 1 section of each in Cantonese).

The evaluator visited several classrooms and spoke with Teachers, Educational Assistants, and students. The following are brief accounts of those visits or conversations:

Chinese N.L.A.: The teacher used Mandarin and the Yale Romanization system in spelling out Chinese. With a commanding voice she introduced many terms and definitions, and asked the students to participate in the process. An ethnic Chinese student from Vietnam, speaking in Mandarin, related a humorous story based on his experiences under Communist rule. He was praised by the teacher and his classmates. Another Cantonese-dominant student recited a poem in Mandarin. The mere fact that he was willing to perform in a different dialect reflected great effort.

Cantonese World History Class: The teacher conducted a review session using primarily Cantonese. The students followed her reading of the review test, which consisted of multiple-choice questions, and clarified any questions asked. Students showed interest when they were asked to take turns reading the questions aloud. They seemed to understand what they were reading.

Korean World History: This class was studying the organization of the United Nations. The teacher wrote key terms on the blackboard, and provided translations into Korean. In her explanations she used or referred to the English terminology frequently.

Chinese World History: This class was also studying the United Nations. The students were asked questions, to which they responded in Chinese or English.

Chinese World Studies: The class focused on the geography of Southeast Asia. This was one of the last classes before the examination. There was some degree of attention focused on the evaluator from the Board of Education whose presence may have diverted the curiosity and interest of the students.

TABLE I

Funding Sources for Program Personnel

NO. / POSITION	RESPONSIBILITY	FUNDING
1 Program Coordinator	Administration, coordination, direction of program implementation	Title VII
1 Resource Teacher	Development of Chinese bilingual materials	Title VII
1 Guidance Counselor	Academic and Vocational counseling	Title VII
2 Family-Community Liaisons (paras.)	Home/school relations, Chinese- and Korean-dominant	Title VII
3 Educational Assistants	Assistance in development of Chinese bilingual materials; assist Chinese-dominant students	Title VII
1 Educational Assistant	Assistance in development of Korean bilingual materials; assist Korean-dominant students	Title VII
1 Secretary Intern	Secretarial office duties	Title VII
2 Parent ESL Trainers (part-time)	ESL instruction to parents	Title VII
1 Teacher	Instruction in Chinese bilingual Social Studies	Chap. 720
1 Educational Assistant	Assistance in instruction in Chinese bilingual classes, and in resource development	Chap. 720
1 Teacher	Instruction in Chinese bilingual science	Tax-levy
1 Teacher	Instruction in Chinese NLA	Tax-levy
1 Teacher*	Instruction in Korean NLA and bilingual Social Studies	Tax-levy
6-8 Teachers**	ESL instruction	Tax-levy

*Effective Feb. 1, 1979

**Number varied; ESL instruction is given in classes composed of students of various home languages.

TABLE II:

1979-1980 Instructional Offerings

Chinese/Korean Bilingual Education

9th Grade

Course	Periods/Day	Language Used	Offered at:
ESL	2	English	All Consortium High Schools
Bilingual Korean or Chinese World Study	1	Korean or Chinese	Newtown High School
Bilingual Chinese General Science	1	Chinese	Newtown High School
Physical Education	1	English	All Consortium High Schools
Chinese Language or Korean Language	1	Chinese or Korean	Newtown High School

10th Grade (1st Half)

ETR (or equivalent)	1	English	All Consortium High Schools
Bilingual Chinese or Korean World History	1	Korean or Chinese	Newtown High School
Bilingual Chinese Biology	1	Chinese	Newtown High School
Chinese Language or Korean Language	1	Chinese or Korean	Newtown High School
Physical Education	Choice of One	English	All Consortium High Schools
Art		English	All Consortium High Schools
Music			All Consortium High Schools

TABLE II

(Continued)

10th Grade (2nd Half)

ETR (or equivalent)	1	English	All Consortium High Schools
Bilingual Chinese or Korean World History II	1	Korean or Chinese	Newtown High School
Bilingual Chinese Biology	1	Chinese	Newtown High School
Chinese Language or Korean Language	1	Chinese or Korean	Newtown High School
Physical education	Choice of one	English	All Consortium High Schools
Art		English	All Consortium High Schools
Music		English	All Consortium High Schools

V. NON-INSTRUCTIONAL COMPONENT

A. Curriculum and Materials Development: This component of the Center's activities was implemented by two Teachers (Title VII and Chapter 720) and three Educational Assistants (two Title VII, one Chapter 720).

In the spring term, two specialists were hired to replace the Resource Teacher who had been working on the development of Social Studies materials. One of these specialists showed the evaluator several books which were being digested, combined, and translated to improve the presentation of World History to Chinese-dominant students. These texts included Man's Unfinished Journey: A World History By Marvin Perry, and Exploring World History by S. Holt and J.R. O'Connor. Students will be encouraged to refer to the English texts. The project is in two parts; the first spans from pre-history to industrialization; the second continues from that juncture to the present.

Program-developed curricula now in use in program classes include World Studies and Biology (both in Chinese). The comprehensive Biology manual was undertaken in 1978, and completed during the 1979-80 school year. It offers explanations and terminology in Chinese and English.

Other curricula generated by the Center include N.L.A. in Chinese and Korean.

A handbook for newly admitted Korean students was prepared during 1979-80. (A similar handbook exists in Chinese as well.) It is a 30-page document which familiarizes new students with the rights and responsibilities of Newtown students, and with the resources available at the school. It is designed to be useful to parents as well as students.

The Center makes use of the Asian Curriculum Development Center at Seton Hall, which furnishes assistance in generating materials in Korean.

B. Supportive Services: Title VII funding provides the services of a Chinese-speaking Bilingual Teacher Counselor, who assists participating students with academic and vocational problems. The Bilingual Teacher Counselor also works closely with the Family-Community Liaisons to help students and their families alleviate problems which obstruct the educational process. (See Parent/Community Involvement.) The Bilingual Teacher Counselor carries out testing and programming of incoming students, and does field work at the Consortium high schools as well.

The evaluator was present in a Social Studies class in which a student was disruptive and he was sent to the Bilingual Teacher Counselor. The Counselor noted that the situation of this student was not uncommon: he lives with his father, who is too busy to look after him after school. The student also works part-time. His academic record is below par, and in general he seems apathetic toward school. But when he spoke with the Bilingual Teacher Counselor, he was willing to admit that he had behaved in an unacceptable manner, and he promised to improve.

The services of the Bilingual Teacher Counselor may be particularly valuable to students who arrive with academic backgrounds that are below the standards they find at Newtown, and who tend to obscure their lack of preparedness by acting out in other ways.

Supportive tutorial services are available to students from the Educational Assistants. Students often require help, for example, with terminology in Mathematics (which all students take in the mainstream).

C. Staff Development: Staff development activities are implemented by the Project Coordinator. Members of the Center's staff participated in Board of Education Workshops, and attended lectures on native culture and curriculum development offered by consultants (funded by Title VII) in Chinese and Korean bilingual education. These lectures took place twice each month. Classroom observation is technically the responsibility of the Chairperson of the Foreign Language Department, but because of the language barrier is carried out in consultation with the Project Coordinator. The services of a Teacher Trainer are obtained on a consultant basis.

In addition to these program-related staff development activities, several of the Center's personnel (including the Project Coordinator, both Family-Community Liaisons, and several of the Teachers and Educational Assistants) were enrolled in university courses relating to bilingual education, education, or administration.

D. Parent/Community Involvement: The Project Coordinator stressed that particular weight is given to this component of the program, and that much of the program's success has hinged on the close cooperation of parents.

Two Family-Community Liaisons work with bilingual students at all the Consortium schools. One is Chinese-dominant (and speaks both major dialects); the other is Korean-speaking. The Chinese-speaking Family Worker spends one-half day at each Consortium school (except at John Bowne, where he visits upon request) and two and one-half days at Newtown. The Korean Family Worker spends one-half day at each Consortium school and two full days at Newtown.

These Family Workers cooperate closely with the guidance personnel or deans' offices at the Consortium schools. In addition, they reported to the evaluator their activities in the following areas: they render help to parents, translating materials when necessary, arranging meetings between teachers and parents, and in general maintaining communications between home and school; they offer assistance to students or family members who have health problems or who are in the hospital; they participate in cultural activities, particularly in the organization of clubs and special events; they work toward establishing closer relationships between American English-dominant teachers and Chinese and Korean parents.

The Center provided in 1979-1980 five ESL classes for parents; the two part-time teachers of these classes were funded by Title VII. Four classes met weekly at Newtown; a fifth was held at the Flushing Community Center. Ninety-one Chinese and 31 Korean-speaking adults participated, and all had perfect attendance. According to program records, 100% of the parents who took part in the ESL classes passed teacher-made examinations in English in both the fall and spring terms.

Parents also participated in the Parent Advisory Committee--a body of approximately 9 parents--and in field trips. They were closely involved in producing the elaborate program (particularly in costuming and makeup) called Asian Night. In addition to that gala event, parents participated in the Korean Community Festival and in Oriental Night. At the latter event, some 700 parents, students, and community members were assembled at Newtown.

In this way, parents get to know not only the Family-Community Liaisons, but also the Project Coordinator, the Cultural Specialist, the Bilingual Teacher Counselor, the teachers, and the Educational Assistants. One Educational Assistant remarked to the evaluator that parents often need considerable assistance to understand the American school system, and particularly to comprehend the goals of bilingual education. Many of them initially do not grasp the difficulty which their children would encounter in handling academic work in English exclusively without the benefit of an intensive ESL program and an interim, transitional bilingual program.

E. Affective Domain: The Center encourages students to participate in extracurricular activities, and to take part in the cultural activities sponsored by the bilingual program. These activities help to alleviate the sense of isolation experienced by many students when they arrive at Newtown.

Many cultural activities and related school functions were coordinated in 1979-80 by the Cultural Specialist, a speaker of Chinese who, with the assistance of the Korean Family-Community Liaison, also coordinated Korean cultural activities. She arranged such events as the celebration of the Chinese New Year (January, 1980), the Parents' Conference (February, 1980) and Asian Night (May, 1980).

Because this program was in 1979-80 in its second year of operation, its students have yet to graduate and enter the job market or continue their education. For this reason, little information is available about how Center students have fared outside of the school experience.

The evaluator did, however, speak with a number of students, including the 30 students in a Korean NLA class (who used the translation services of their teacher to communicate their responses). They expressed positive feelings about the program; some said they hope to join mainstream classes as soon as possible, while others stated that they would rather stay with the program, because the language barrier would otherwise make studies in content areas very tedious.

VI. FINDINGS

Assessment Procedures and Findings

The following section presents the assessment instruments and procedures, and the results of the testing.

Students were assessed in English language development, growth in their mastery of their native language, mathematics, social studies and science. The following are the areas assessed and the instruments used:

English as a Second Language	--	Criterion Referenced English Syntax Test, Levels 1 and 2
English Language Fluency	--	New York City Fluency Scale, Expressive and Receptive Domains
Reading in English	--	New York City Reading Test, Forms A, B Teacher-made Tests
Mathematics Achievement	--	New York City Mathematics Test
Science Performance	--	Teacher-made Tests
Social Studies Performance	--	Teacher-made Tests
Native Language Arts Performance	--	Teacher-made Tests
Native Language Achievement	--	Teacher-made Tests
Attendance	--	School and Program Records

A. To assess growth in Reading and Mathematics achievement, a "norm referenced" evaluation model was applied to the observed raw score distributions at each grade level. This model compares the observed achievement level of program students to an expected average achievement level. The expected achievement level corresponds to the theoretical level of achievement that would have occurred in the absence of instructional intervention (see Appendix C).

The difference between expected and actual (observed) achievement was compared for significance.

1. Statistical Significance was determined through the application of the correlated t-test model. This statistical analysis demonstrates whether the difference between pre-test and post-test mean scores is larger than would be expected by chance variation alone; i.e. is statistically significant.

2. Educational Significance was determined for each grade level by calculating an "effect size" based on observed summary statistics using the procedure recommended by Cohen.[1] An effect size for the correlated t-test model is an estimate of the difference between pre-test and post-test means expressed in standard deviation units freed of the influence of sample size. It became desirable to establish such an estimate because substantial differences that do exist frequently fail to reach statistical significance if the number of observations for each unit of statistical analysis is small. Similarly, statistically significant differences often are not educationally meaningful.

Thus, statistical and educational significance permit a more meaningful appraisal of project outcomes. As a rule of thumb, the following effect size indices are recommended by Cohen as guides to interpreting educational significance (ES):

a difference of 1/5 = .20 = small ES

a difference of 1/2 = .50 = medium ES

a difference of 4/5 = .80 = large ES

B. On the Criterion Referenced English Syntax Test (CREST) the number of objectives mastered on each level of the test, the average number of objectives mastered across all test levels, and the average number of objectives mastered for every month of instructional treatment are reported for each language group. No calculations of mastery rates

[1]Jacob Cohen. Statistical Power Analysis for the Behavioral Sciences (Revised Edition). New York: Academic Press, 1977 Chapter 2.

(percentage of objectives mastered in relation to objectives attempted) were possible due to reporting inaccuracies in the number of objectives attempted for program students.

C. For the New York City Oral Language Ability Rating Scale, the total number and percent of students improving at least one scale level is compared to the criterion set by the program, which stipulated that 60% of the students will demonstrate growth of one level or more.

D. The results of the criterion referenced tests in social studies, science and native language arts are reported in terms of the number and percent of students achieving the criterion levels set for the participants (60% passing).

E. Information is provided on the attendance rate of students participating in the bilingual program, compared statistically with that of the total school population, and attendance rates of parents are reported.

The following pages present student achievement in tabular form.

TABLE III

English as a Second Language
Chinese Speaking Students

Results of the Criterion Referenced English Syntax Test (CREST)
Reporting the Number of Objectives Mastered, and Objectives
Mastered Per Month

Grade	# of Students	Average # of Objectives Mastered	Average Months of Treatment	Objectives Mastered Per Month
9	71	16.3	7.0	2.3
10	23	21.1	8.4	2.5
Totals	94	17.5	7.3	2.4

Total year CREST performance of Chinese speaking students regardless of test level revealed that 9th grade students mastered an average of 16.3 objectives. For the average months of treatment 9th graders were in the program, 2.3 objectives were mastered per month of treatment. Tenth grade students mastered 21.1 objectives on the average; 10th graders mastered 2.5 objectives on the average for every month of treatment. The data indicate very high growth rates for English language learning.

TABLE IV

English as a Second Language
Chinese Speaking Students

Student Performance on the
Criterion Referenced Enlish Syntax Test (CREST)
A Breakdown by Test Level and Grade.

		LEVEL I	LEVEL II	LEVEL III
Grade	Students	Mastered	Mastered	Mastered
9	71	1071	85	—
10	23	286	199	—
Totals	94	1357	284	—

Table IV shows the number of objectives mastered by Chinese speaking students on the CREST during the total year by grade and test level. Grade 9 students functioned basically on level I where they mastered 1071 objectives; for those 9th graders who functioned on level II, 85 objectives were mastered. Tenth grade students functioned primarily on level I (286 objectives were mastered); 199 were mastered on level II.

TABLE V

English as a Second Language
Korean Speaking Students

Results of the Criterion Referenced English Syntax Test (CREST)
Reporting the Number of Objectives Mastered, and Objectives
Mastered Per Month

Grade	# of Students	Average # of Objectives Mastered	Average Months of Treatment	Objectives Mastered Per Month
9	9	20.2	5.1	4.0
10	40	20.6	7.6	2.7
Totals	49	20.5	7.1	2.9

Total year CREST performance of Korean speaking students regardless of test level revealed that 9th grade students mastered an average of 20 objectives; given an average treatment time of 5.1 months, 9th graders mastered 4 objectives for every month of instruction. Tenth graders mastered an average of 21 objectives; for an average treatment time of 7.6 months, 10th graders mastered 2.7 objectives for every month of treatment. The data indicate very high growth rates for English language learning.

TABLE VI

English as a Second Language
Korean Speaking Students

Student Performance of the
Criterion Referenced English Syntax Test (CREST)
A Breakdown by Test Level and Grade.

Grade	Students	LEVEL I Mastered	LEVEL II Mastered	LEVEL III Mastered
9	9	82	100	—
10	40	281	542	—
Totals	49	363	642	—

Table VI shows the number of objectives mastered by Korean speaking students on the CREST during the total year by grade and test level. Students in both grades 9 and 10 appeared to have functioned on the intermediate test level (level II) primarily. This is more pronounced for 10th grade students. Ninth graders mastered 82 and 100 objectives on level I and II, respectively. Tenth graders mastered 281 and 542 objectives on levels I and II, respectively.

TABLE VII

ORAL LANGUAGE ABILITY

Chinese Speaking Students

Number and Percentages of Students Advancing
One Level or More on the Expressive and Receptive Modes
on the Oral Language Ability Rating Scale, by Grade

Grade	N	Expressive Domain		Receptive Domain	
		Students Advancing One Level	%	Students Advancing One Level	%
9	71	64	90%	62	87%
10	31	27	87%	28	90%

In the expressive mode, the percentage of Chinese speaking students gaining one scale rating was 90% at the 9th grade and 87% at the 10th grade. In the receptive mode, the percentage of students gaining one scale rating was 87% at the 9th grade and 90% at the 10th grade.

In view of the stated evaluation objective that at least 60% of the students will gain at least one scale rating, the above table indicates that this objective was achieved in each grade level in the expressive mode and in the receptive mode.

Interpretation of these data should be conditioned, however, by the fact that the initial rating of the students is not reflected in these data. Examination of the Rating Scale itself (Appendix A) reveals that the rates of expected progress from one level to another are not symmetrical. It may be expected that students who speak little or no English (levels E or F) will progress one scale level within a year of instruction, but that students functioning at a relatively higher level (level B, for example) may not reach a higher level in one year. These levels represent degrees of fluency approaching or equalling that of a native speaker of English. It is unreasonable and unrealistic to expect rates of student progress at these levels similar to those of beginning students of ESL. Level A, for example, is unlikely to be achieved by students

who have not had extensive exposure to oral and written English. Those who learn English as adults may never achieve it. Level B is also likely to require years of exposure to English.

It is suggested, therefore, that student outcomes be analyzed in terms of the initial fluency rating of each student, and that the criteria for mastery reflect reasonable expectations for student growth at each level.

TABLE VIII

ORAL LANGUAGE ABILITY

Korean Speaking Students

Number and Percentages of Students Advancing One Level or More on the Expressive and Receptive Modes on the Oral Language Ability Rating Scale, by Grade

Grade	N	Expressive Domain		Receptive Domain	
		Students Advancing One Level	%	Students Advancing One Level	%
9	8	8	100%	8	100%
10	24	19	79%	24	100%

In the expressive mode, the percentage of Korean speaking students gaining one scale rating was 100% at the 9th grade and 79% at the 10th grade. In the receptive mode, the percentage of students gaining one scale rating was 100% at the 9th and 10th grades.

In view of the stated evaluation objective that at least 60% of the students will gain at least one scale rating, the above table indicates that this objective was achieved in each grade level in the expressive mode and in the receptive mode.

Interpretation of these data should be conditioned, however, by the fact that the initial rating of the students is not reflected in these data. Examination of the Rating Scale itself (Appendix A) reveals that the rates of expected progress from one level to another are not symmetrical. It may be expected that students who speak little or no English (levels E or F) will progress one scale level within a year of instruction, but that students functioning at a relatively higher level (level B, for example) may not reach a higher level in one year. These levels represent degrees of fluency approaching or equalling that of a native speaker of English. It is unreasonable and unrealistic to expect rates of student progress at these levels similar to those of beginning students of ESL. Level A, for example, is unlikely to be achieved by students

who have not had extensive exposure to oral and written English. Those who learn English as adults may never achieve it. Level B is also likely to require years of exposure to English.

It is suggested, therefore, that student outcomes be analyzed in terms of the initial fluency rating of each student, and that the criteria for mastery reflect reasonable expectations for student growth at each level.

TABLE IX

READING ACHIEVEMENT

Chinese Speaking Students

Significance of the Difference Between Expected and Actual Achievement for Students with Full Instructional Treatment on the New York City Reading Test, Forms A,B

Grade	N	Pre Mean	Pre S.D.	Post Mean	Post S.D.	Expected Mean	Mean Diff. Post-Exp.	Corr. Pre/Post	t	p	ES
9	12	26.9	10.8	29.3	14.8	29.0	.3	.54	-	-	-
10	29	25.2	9.3	31.4	10.2	28.0	3.4	.32	1.57	NS	.30
11	30	41.9	14.4	45.8	16.2	46.0	-.2	.88	-.14	NS	-
12	15	44.7	12.5	51.0	12.1	44.0	7.0	.77	3.14	.05	.84

Table IX presents results of reading achievement for Chinese-speaking students of the NYC Reading Test. No statistical analyses were performed for results based on students in grade 9. In this grade, a high percentage of students received probable chance scores* which preclude any meaningful analyses. The test was demonstrably too difficult for students. The results for the 10th grade showed that students made a small to moderate educationally significant gain in achievement beyond expectation. Eleventh grade students showed a small (.2 point) decline in performance when actual post-treatment achievement was compared with expected achievement.* Twelveth grade students achieved 7 points over and beyond the no treatment expectation. This gain was statistically significant beyond the .05 level. The beyond expectation growth was highly significant educationally.

*See Appendix B and Appendix C

TABLE X

READING ACHIEVEMENT

Korean Speaking Students

Significance of the Difference Between Expected and Actual Achievement for Students with Full Instructional Treatment on the New York City Reading Test, Forms A,B

Grade	N	Pre Mean	Pre S.D.	Post Mean	Post S.D.	Expected Mean	Mean Diff. Post-Exp.	Corr. Pre/Post	t	p	ES
9	5	28.8	11.4	35.6	9.6	32.0	3.6	.53	.70	NS	.35
10	21	22.9	8.3	30.8	8.0	24.0	6.8	.91	8.76	.001	1.96
11	6	30.7	11.1	28.8	5.7	32.0	-3.2	.95	-1.20	NS	--

Table X shows the results for the New York City Reading Test administered to Korean speaking students. Students in grade 9 did not show statistically significant growth beyond expectation. The ES index suggests a small educationally significant gain which points up the small sample size-no statistically significant relationship. Grade 10 students show a 7 point gain that was highly significant in statistical and educational units. Grade 11 students showed a nonsignificant decline in performance. It must be noted, however, that a large percentage of students performed at a probable chance level* at pre-testing. Hence, the above results should be interpreted with caution for 11th graders.

*See Appendix B and Appendix C

TABLE XI

MATHEMATICS ACHIEVEMENT

Chinese Speaking Students

Significance of the Difference Between Expected and Actual Achievement for Students with Full Instructional Treatment on the New York City Mathematics Test, Forms A, B

Grade	N	Pre Mean	Pre S.D.	Post Mean	Post S.D.	Expected Mean	Mean Diff. Post-Exp.	Corr. Pre/Post	t	p	ES
9	35	25.3	9.0	30.1	8.9	27.0	3.1	-.16	1.32	NS	.22
10	37	36.8	7.7	40.1	7.0	37.0	3.1	.66	3.05	.05	.51
11	31	38.5	9.8	40.0	8.7	40.0	0.0	.69	0.0	NS	.00
12	15	41.5	9.6	43.9	4.1	40.0	3.9	.30	1.57	NS	.42

Table XI shows the mathematics achievement of Chinese speaking students on the NYC Mathematics Test. As seen in table XI, only 10th grade students showed statistically significant gains. Their gains were of moderate educational significance. Students in grade 9 made no statistically significant gains beyond expectation but their growth was of small educational significance. The observation of no significant growth for students in grades 11 and 12 is most likely due to a "ceiling effect," in which students tended to score at the top of the scale.* Thus, for these students, the mathematics test is too easy, i.e., at grade 11, students performed at the 82nd and 84th percentiles at pre-and post-test respectively, while in grade 12, students performed at the 94th percentiles at pre- and post-tests, respectively. Evident at all grade levels is the smaller than expected pre/post correlations, which suggests that the instrument did not measure the function tested at high levels of reliability.

*See Appendix B and Appendix C

TABLE XII

MATHEMATICS ACHIEVEMENT

Korean Speaking Students

Significance of the Difference Between Expected and Actual Achievement for Students with Full Instructional Treatment on the New York City Mathematics Test, Form A, B

Grade	N	Pre Mean	Pre S.D.	Post Mean	Post S.D.	Expected Mean	Mean Diff. Post-Exp.	Corr. Pre/Post	t	p	ES
9	5	34.0	10.2	34.6	7.4	36.0	-1.4	.87	-.53	NS	--
10	20	38.1	5.9	39.2	5.6	38.0	1.2	.95	2.84	.01	.65
11	6	28.7	8.4	28.0	9.1	30.0	-2.0	.97	-1.98	.05	--

Table XII presents mathematics achievement results for Korean speaking students on the NYC Mathematics Test. Ninth grade students showed no significant growth. Grade 10 students made statistically significant growth beyond expectation as well as moderately educationally significant growth. Grade 11 students showed a statistically significant decline when actual post-test was compared with expected growth. While students in grades 9 and 11 showed no significant gains, the observed test means are above grade level in each grade* Thus, while the treatment did not increase achievement significantly, students compare favorably with the population on which the instrument was normed. Hence, to say that students did not demonstrate growth that was statistically significant is misleading. In fact, student achievement was on a par with achievement of students who achieve above the national average.

*See Appendix B and Appendix C

TABLE XIII

SCIENCE ACHIEVEMENT

Chinese Speaking Students
(Chapter 720 Designated Students)

Number and Percent of Students Passing

Teacher-Made Examinations in Science

	FALL 1979			SPRING 1980		
Grade	N	Number Passing	Percent Passing	N	Number Passing	Percent Passing
9	55	46	83.6%	86	69	80.2%
10	39	38	97.4%	44	42	95.5%

Chapter 720 designated Chinese speaking students were tested in grades 9 and 10 in Science Achievement. In Fall, 83.6% of 9th grade students passed exams, and in Spring, 80.2% passed. In Fall, 10th grade students passed exams at the rate of 97.4%, and in Spring the pass rate was 95.5%. Thus, students met and substantially surpassed the stated objective in science achievement.

TABLE XIV

SCIENCE ACHIEVEMENT

Korean Speaking Students

Number and Percent of Students Passing

Teacher-Made Examinations in Science

Grade	FALL 1979 N	Number Passing	Percent Passing	SPRING 1980 N	Number Passing	Percent Passing
9	- - - - NO DATA - - - -			6	6	100.0%
10	- - - - NO DATA - - - -			7	7	100.0%

Korean speaking students were tested in Spring with teacher-made tests in Science in grades 9 and 10. It is evident that all students passed exams in each grade. Thus, the stated objective for science was met and overwhelmingly surpassed.

TABLE XV

SOCIAL STUDIES ACHIEVEMENT

Chinese Speaking Students
(Chapter 720 Designated Students)

Number and Percent of Students Passing

Teacher-Made Examinations in Social Studies

	FALL 1979			SPRING 1980		
Grade	N	Number Passing	Percent Passing	N	Number Passing	Percent Passing
9	49	45	91.8%	84	65	77.4%
10	38	35	92.1%	48	46	95.8%

In grade 9, Chapter 720 designated Chinese speaking students passed teacher-made exams in Social Studies at the rate of 91.8%. In Spring 9th grade students passed at the rate of 77.4%. Tenth grade students showed pass rates of 92.1% in Fall and 95.8% in Spring. Thus, students met and substantially surpassed the stated objective in Social Studies.

TABLE XVI

SOCIAL STUDIES ACHIEVEMENT

Korean Speaking Students
Number and Percent of Students Passing

Teacher-Made Examinations in Social Studies

Grade	FALL 1979 N	Number Passing	Percent Passing	SPRING 1980 N	Number Passing	Percent Passing
9	3	3	100.0%	11	10	91.0%
10	17	17	100.0%	25	22	88.0%

In Fall, 100% of 9th grade Korean speaking students passed teacher-made exams. In Spring 91% passed. Among 10th grade students, 100% passed Fall exams while 88% passed Spring exams. In each grade, Korean-Speaking Students met and substantially surpassed the stated objective for Social Studies.

TABLE XVII

NATIVE LANGUAGE ARTS ACHIEVEMENT

Chinese Speaking Students
(Chapter 720 Designated Students)

Number and Percent of Students Passing

Teacher-Made Examinations in Native Language Arts

Grade	FALL 1979 N	Number Passing	Percent Passing	SPRING 1980 N	Number Passing	Percent Passing
9	56	56	100.0%	89	79	88.8%
10	61	60	98.4%	64	64	100.0%
11	31	31	100.0%	33	33	100.0%
12	15	15	100.0%	15	15	100.0%

Chapter 720 designated Chinese speaking students were tested in Native Language Arts in grades 9 through 12. In grade 9, all students passed teacher-made exams in Fall, and 88.8% passed in Spring. In Fall Grade 10 students passed at a rate of 98.4% and, in Spring, all students tested passed. In grade 11 and 12, all students tested passed both Fall and Spring exams. Thus, Chinese speaking students met and overwhelmingly surpassed the stated objective for Chinese Language Arts.

TABLE XVIII

NATIVE LANGUAGE ARTS ACHIEVEMENT

Korean-Speaking Students

Number and Percent of Students Passing

Teacher-Made Examinations in Native Language Arts

Grade	FALL 1979 N	Number Passing	Percent Passing	SPRING 1980 N	Number Passing	Percent Passing
9	6	5	83.3%	13	13	100.0%
10	27	26	96.3%	32	32	100.0%
11	6	6	100%	6	5	83.3%

In grade 9, 83% of Korean-speaking students passed teacher-made exams in Native Language Arts in Fall, and all (100%) passed exams in the Spring. In Fall, 96% of 10th grade students passed Fall exams and 100% passed Spring exams. For 11th grade students, 100% passed in the Fall, and 83% passed in the Spring. Students met and substantially surpassed the stated objective for Native Language Arts.

TABLE XIX

NATIVE LANGUAGE ACHIEVEMENT

Chinese Speaking Students

Significance of Mean Total Raw Score Differences Between Initial and Final Test Scores in Native Language Achievement of Students with Full Instructional Treatment on Teacher-Made Tests

		Pre-Test		Post-Test						
Grade	N	Mean	Standard Deviation	Mean	Standard Deviation	Mean Difference	Corr. Pre-Post	t	p	ES
9	- - - - - - - - - - - - - - - - - NO DATA - - - - - - - - - - - - - - - - - - -									
10	62	84.5	11.7	87.5	10.2	3.0	.87	4.17	.001	.53
11	31	87.2	7.2	90.4	5.7	3.2	.69	3.38	.025	.61
12	16	83.4	9.8	87.8	7.0	4.4	.77	2.75	.025	.69

Chinese speaking students showed statistically and educationally significant growth at all grade levels tested in Native Language Achievement on teacher-made tests. Gains ranged from 3.0 raw score points in grade 10 to 4.4 points in grade 12. The observed post-test means differed from initial test means by greater than one-half of a standard deviation in all grade levels. Thus substantial growth was demonstrated by Chinese speaking students throughout the grades tested.

TABLE XX

NATIVE LANGUAGE ACHIEVEMENT

Korean Speaking Students

Significant of Mean Total Raw Score Differences Between Initial and Final Test Scores in Native Language Achievement of Students with Full Instructional Treatment on Teacher-Made Tests

		Pre-Test		Post-Test						
Grade	N	Mean	Standard Deviation	Mean	Standard Deviation	Mean Difference	Corr. Pre-Post	t	p	ES
9	13	72.3	9.3	75.8	10.2	3.5	.66	1.56	NS	.43
10	31	78.6	10.6	83.4	11.5	4.7	.73	3.25	.025	.58
11	6	72.5	9.9	69.2	10.2	-3.3	.87	-1.58	NS	-

Korean speaking students showed growth in grades 9 and 10 on teacher-made tests of Korean Language Achievement. Grade 9 students did not show statistically significant growth; however, their post-test mean was .43 standard deviations higher than their pre-test mean. Students in grade 10 showed a 4.7 point gain which was statistically and educationally significant. Grade 11 students showed a nonstatistically significant decline in performance. However, loss cannot be meaningfully interpreted due to the very small sample size ($n = 6$). Thus, grade 9 and 10 students showed meaningful gains within the limits of the test precision achieved while the achievement of 11th grade students could not be meaningfully assessed.

TABLE XXI

ENGLISH LANGUAGE ACHIEVEMENT

Chinese and Korean Speaking Parents

Number and Percent of Parents Passing
Teacher-Made Examinations in English

	FALL 1979			SPRING 1980		
Grade	N	Number Passing	Percent Passing	N	Number Passing	Percent Passing
Chinese Speaking Parents	91	91	100%	91	91	100%
Korean Speaking Parents	31	31	100%	31	31	100%

It is evident that all Chinese and Korean speaking parents passed teacher-made examinations in ESL courses at the Fall and Spring testing dates.

TABLE XXII

ATTENDANCE

Chinese Speaking Students

Significance of the Difference between Attendance Percentages of Program Students and the Attendance Percentage of the School

Average School-Wide Attendance Percentage: 85%

Grade	N	Mean Percentage	Standard Deviation	Percentage Difference	t	P
9	121	88.6	27.0	3.6	1.47	NS
10	122	92.2	20.0	7.2	3.98	.001
11	33	95.9	4.8	10.9	13.04	.001
12	16	95.9	3.8	10.9	11.47	.001

Table XXII presents attendance data for Chinese speaking students, and the significance of the difference between average attendance rate for program students and the school-wide average attendance rate. The school-wide attendance was 85%, a rather high rate. Program students in grade 9 attended 88.6% of the days enrolled or 3.6% more than the school at large. This difference, however, was not statistically significant at the .05 level of significance. However, an attendance rate of approximately 89% is very high indeed. Students in grades 10 and 11 attended at rates of 92.2% and 95.9%, respectively. The 10th grade student average of 92.2% was 7.2% higher than the school wide rate of 85%, a difference that was highly significant statistically. The grade 11 students' attendance rate exceeded the school-wide average by 10.9%, a difference that was highly statistically significant. Students in grade 12 surpassed the school-wide average by 10.9%, a difference that was highly statistically significant. Thus, the attendance objective was met and substantially surpassed in the upper grade levels (10 through 12), and the attendance rate of grade 9 students, while not significantly higher than the school-wide rate, was nevertheless laudable.

TABLE XXIII

ATTENDANCE

Korean Speaking Students

Significance of the Difference between Attendance Percentages of Program Students and the Attendance Percentage of the School

Average School-Wide Attendance Percentage: 85%

Grade	N	Mean Percentage	Standard Deviation	Percentage Difference	t	P
9	15	88.1	27.7	3.1	.25	NS
10	59	95.7	10.9	10.7	7.54	.001
11	6	93.2	7.7	8.2	2.61	.025

Korean-speaking students in grade 9 attended at a rate of 88.1% or 3.1% higher than the school-wide average rate of 85%. This difference was not statistically significant, but the attendance rate of program students was high. Students in grades 10 and 11 did have attendance rates that differed significantly from the school-wide average attendance rate. Tenth grade students attended 95.7% of the time and students in grade 11 attended at a rate of 93.2%. Thus, students in all grade levels attended at rates that were higher than that of the general school-wide rate, which is higher than that of most schools in the city.

TABLE XXIV

ATTENDANCE RATES

Chinese and Korean Speaking Parents

Average Attendance Rate of Chinese and Korean Speaking Parents Enrolled in ESL Class

	Number of Parents	Average Attendance
Chinese Speaking Parents	91	100%
Korean Speaking Parents	31	100%

All of the 91 Chinese speaking and 31 Korean speaking adults enrolled in ESL had perfect attendance.

VII. CONCLUSIONS AND RECOMMENDATIONS

Before the evaluator took on the assignment of observing and assessing the Chinese/Korean Bilingual Language Arts Resource Center at Newtown High School, he was familiar with both the Center and the school. He had performed some services for the Center on a cultural project in summer, 1978.

The evaluator furthermore comes from a bilingual family; his own experiences as a graduate student in the U.S., who had to compensate for a limited command of English language, confirmed his belief in the bilingual approach.

Having stated his orientation toward the program and toward bilingual education in general, the evaluator wishes to offer the following summary of his findings.

The Chinese/Korean Resource Center at Newtown High School is providing important services for its target population, as well as for the students at the Consortium schools (who receive ancillary services).

The Center provides bilingual Korean and/or Chinese classes in content areas (World Studies, World History, General Science, Biology), and in Native Language Arts. It also furnishes students with intensive instruction in English as a Second Language and in Reading in English tutorial support provided by Educational Assistants allows students to profit by additional help in those areas and in Mathematics.

Program personnel have undertaken significant work in the preparation and translation of curriculum materials; program-generated materials are also revised when necessary.

The methodology of classroom teachers seemed to be sound; in particular the evaluator was impressed by the commitment to transition. The Teachers and Educational Assistants expressed to him their desire to use English as much as possible.

The Chinese bilingual program at Newtown has now completed its second year. The Korean program, which commenced a half-year later, has now completed one and a half years. The staff is to be commended on the excellent results it has achieved, and on the warm and cooperative relationship it has apparently established with parents and other members of the community. The services provided by the Center should be continued; indeed, they are vital to this target population. Asian students who arrive in the U.S. as adolescents are approaching a critical point in their lives, when they may absorb the information and acquire the skills they will need to succeed on the job market and to make a cultural adjustment to their new environments while retaining their self-identities. The alternative is often dropping out of school, succumbing to the appeal of gang membership, and/or resigning oneself to either unemployment or menial, low-paying jobs. Bilingual education and supportive services are particularly crucial for this population.

The evaluator wishes to offer the following recommendations:

1) It is recommended that, if funding is available, bilingual instruction in mathematics should be offered;

2) The space in which the Center operates is overcrowded; concentration is difficult or impossible in the office. A larger area is needed for efficient administration of the program.

3) The guidance staff and liaison staff have played a key role in promoting a better relationship between the students and the school, and in instilling the discipline needed for an effective educational setting. The Bilingual Teacher Counselor should be assisted by an additional staff member, since disciplinary problems among new students suggest that students need more help in making the difficult emotional and cultural adjustment to a radically different environment.

4) Because the development and duplication of curriculum materials is so crucial to a program serving Chinese and Korean students--who have access to relatively few materials in their languages--a duplicating machine should be provided to the program which can reproduce materials from books. In general, the Center would benefit greatly from improved machinery for reproducing pertinent materials.

5) It is recommended that the PSEN New York City Reading Test be carefully reviewed for its appropriateness. The Reading Test was too difficult for 9th and 10th grade Chinese- and Korean-speaking students, resulting in a substantial number of students obtaining probable chance scores.

6) On the PSEN New York City Mathematics Test substantial numbers of upper grade students were performing near the ceiling of the test, thereby reducing the possibility of students demonstrating real (or statistically significant) growth. The following alternatives are offered to resolve this problem:

1) select a different test (or test level) which more adequately assesses the students' superior level of mathematics performance, or

2) change the interpretation of the results from a within-group growth model to a normed group comparison model.

VIII. APPENDICES

APPENDIX A

ORAL LANGUAGE ABILITY RATING SCALE

NEW YORK CITY

Oral Language Ability Rating Scale, New York City

Scale for Rating Pupil's Ability to Speak English

Enter for each pupil the letter A, B, C, D, E, F corresponding to his estimated ability to speak English in the classroom, defined as follows:

A -- Speaks English, for his age level, like a native - with no foreign accent or hesitancy due to interference of a foreign language.

B -- Speaks English with a foreign accent, but otherwise approximates the fluency of a native speaker of like age level. Does not hesitate because he must search for English words and language forms.

C -- Can speak English well enough for most situations met by typical native pupils of like age, but still must make a conscious effort to avoid the language forms of some foreign language. Depends, in part, upon translation of words and expressions from the foreign language into English, and therefore speaks hesitantly upon occasion.

D -- Speaks English in more than a few stereotyped situations but speaks it haltingly at all times.

E -- Speaks English only in those stereotyped situations for which he has learned a few useful words and expressions.

F -- Speaks no English.

The expected outcomes listed for each grade in this handbook can serve as a guide for evaluating achievement and relating them to the above scale. This is particularly significant for the C, B, and A designations that use as a comparison typical native pupils of like age.

APPENDIX B

TEST ITEM DATA

CHANCE SCORES & PROBABLE CHANCE SCORES

FOR NYC READING TEST, FORMS A, B,

NYC MATHEMATICS TEST, FORMS A, B

THEORETICAL DEFINITIONS*	STATISTICAL DEFINITIONS*
1. CHANCE SCORE The long run test score expected by sheer guessing.	1. CHANCE SCORE = $\frac{\text{Number of Test Items}}{\text{Number of Test Options}}$, rounded up to the nearest integer.
2. PROBABLE CHANCE SCORE A score that is less than or equal to two standard deviations above a chance score.	2. PROBABLE CHANCE SCORE = score $\leq$ chance score + 2x(standard error of chance score), rounded up to nearest integer.
3. PROBABLE NONCHANCE SCORE A score greater than a probable score.	3. PROBABLE NONCHANCE SCORE = score > probable chance score.

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* H. Gulliksen, Theory of Mental Test Scores NY: John Wiley, 1950, p. 263.

TEST ITEM DATA

CHANCE SCORE AND PROBABLE CHANCE SCORE DATA

FOR

THE NYC READING TEST AND NYC MATHEMATICS TEST,

FORMS A & B

	READING				MATHEMATICS			
	Grade Level				Grade Level			
	9	10	11	12	9	10	11	12
No. of Test Items	85	70	85	70	48	48	48	48
No. of Options/Item	4	4	4	4	4	4	4	4
Chance Score	22	18	22	18	12	12	12	12
Probable Chance Score*	30	25	30	25	18	18	18	18

*Chance score plus two standard errors.

APPENDIX C

NORM REFERENCED EVALUATION MODEL

DESCRIPTION AND DISCUSSION

NORM REFERENCED EVALUATION MODEL

Description of Procedure

The Norm Referenced Model used to analyze student achievement outcomes in English reading and mathematics on PSEN tests (New York City Reading and Mathematics Tests, Forms A and B) involved the following procedures:

1. calculate raw score means and standard deviations for pretest and posttest scores for students whose scores were available on both test occasions.

2. enter the pretest norms (October) table and find the percentile rank which corresponds to the observed project pretest raw score mean. This number is the status of the treatment (project) group relative to the norms population. (It is assumed in the model that project students would maintain this same status relative to the norms population if project students did not participate and receive educational treatment in the bilingual program).

3. enter the posttest norms (April) and find the raw score that corresponds to the pretest derived percentile rank. The chosen score represents the average "expected" achievement of project students. (It is assumed that project students would still achieve at the same percentile ranking on posttest as on pretest if no special program was provided).

4. test whether the "actual" posttest mean of project students (the raw score mean students actually made) is significantly greater than the derived "expected" mean. The statistic used is a modified correlated t-test.[1]

5. test for the educational significance of difference between actual and expected growth. That is, compute an "effect size" and interpret the result using the stated conventions of Cohen.[2]

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[1] The modification is the "degrees of freedom" involved in estimating an unbiased standard error of the (actual - expected) difference. That is, the statistic uses N-1 rather than the conventional N for this estimation; one degree of freedom is "lost" as a parameter is being estimated in the model (the expected mean).

[2] Jacob Cohen, Statistical Power Analysis for the Behavioral Sciences (Revised Edition). New York: Academic Press, 1977. Chapter 2.

Discussion of Procedure

The Norm Referenced Model used for analyzing student achievement data was an attempt "to estimate what the performance of participants would have been in the absence of the project."[3] Theoretically, the model allows a comparison with a much larger domain of possible instructional programs than is allowed by the "correlated t-test model" (which considers test-retest within group status only). Thus, on theoretical grounds, the Norm Referenced Model permits stronger inferences about project impact on student achievement. It was felt that the absence of appropriate comparison groups in New York City bilingual evaluation undertakings might make the Norm Referenced Model an acceptable alternative.

However, blind application of a model without consideration of assumptions and limitations is poor statistical and evaluation practice. Thus, it is necessary to be cognizant of the fact that the Norm Referenced Model is valid only when a set of assumptions can reasonably be said to have been met in practice. The validity of the model rests on the fundamental assumption that the achievement status of project students remains constant relative to the norm group during the test-retest time interval if no special instructional intervention is provided. That is to say, it is assumed that if the project group scored at the 25th percentile at pretest relative to the norm group, then project students would have scored at the same relative level at posttest -- students achieve at the 25th percentile each time unless students participate in a special educational program (i.e., Title VII funded program). The empirical evidence supporting or disconfirming the reasonableness of this assumption is meagre if not altogether lacking for bilingual program students. Indeed,

[3] "Rules and Regulations", Section 123a.30e (Evaluation Plan), Federal Register, Vol. 45, No. 67, April 4, 1980.

it may be unreasonable to assume that the performance of limited English proficient students asked to respond on a timed, multiple-option, standardized, norm referenced, English reading test could be validly compared to the performance of a monolingual English-speaking population subgroup (e.g., those scoring at the 25th percentile in the norm group).

In addition, specific to students in the present project is the phenomenon of small sample sizes evident at some grade levels. This factor further confounds the interpretaion of the observed outcomes; for example, the well-know relationship between statistical significance and sample size must be taken into account when judging project impact upon student achievement and growth. Also specific to this project is the puzzling negative t-test value in light of a 5 point gain made between actual posttest and pretest. This may possibly be explained by two factors. First, imperfect interform correlation, most particularly at the extremes of the distribution, may have resulted in an overestimation of expected growth. Second, the possible inadequacy of the testing instruments is underscored by the probable chance scores obtained by a substantial number of project pupils (see Appendix B). The presence of probable or near probable chance scores of a large number of students indicated the very real possibility that substantial error variance was involved in many student scores, thereby lowering test reliability and vitiating true achievement levels and statistical comparisons.

The Norm Referencd Model was applied despite the above limitations. There are other assumptions and limitations regarding psychometics and statistical inference which should be considered. However, the reader must consider the caveats which are discussed in interpreting the outcomes and judging project impact.